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ALBERTA ENVIRONMENT
POLLUTION PREVENTION
PROGRAM DEVELOPMENT

BACKGROUND DOCUMENT

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ALBERTA ENVIRONMENT

POLLUTION PREVENTION PROGRAM DEVELOPMENT

BACKGROUND DOCUMENT

By:

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Prepared for

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FOREWORD

Pollution prevention is described as eliminating or reducing pollutants or wastes at the source rather than dealing with them after they have been created. Alberta Environment (AENV) is considering the development of a formal pollution prevention program to complement existing environmental management practices. The purpose of this report is to provide background information that will be useful to AENV as it moves towards a pollution prevention program.

Nina Novak of Datacomp Ltd. prepared this report for AENV.

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EXECUTIVE SUMMARY

Pollution prevention (P2) is an essential component of sustainable development. Pollution prevention aims to eliminate the source of the pollution rather than managing the waste once it has been created. This involves a change in focus from 'end-of-pipe' waste control to source reduction at the point of generation. Pollution prevention requires a cultural change in order to anticipate, rather than react. Pollution prevention has the potential to completely change the strategy for environmental protection to become deliberate, anticipatory and preventative, rather than a reactive approach.

Alberta Environment has practiced pollution prevention informally for some time, and now recognizes that a more formal approach to pollution prevention is necessary. Alberta Environment is in the process of developing a formalized Pollution Prevention Program. This project provided a summary of the pollution prevention programs in other Canadian jurisdictions, assessed the current application of pollution prevention strategies by Alberta Environment, and in a workshop format, presented the research information and solicited additional input on proposed program format. This document presents the study research, workshop outcomes and recommendations on, pollution prevention approaches that may be workable.

A few trends were noted from the discussions with Canadian provincial pollution prevention regulatory representatives.

- Pollution prevention programs in other provinces are predominantly informal and voluntary.
- Although reference is generally made to the Canadian Council of Ministers of the Environment (CCME) definition of pollution prevention, there was substantial variation in the interpretation of the definition, with the result that many activities deemed to be pollution control in some provinces qualify as pollution prevention in others.
- Where a formalized program existed, there was some type of performance tracking system implemented.
- When a province had some type of established successful pollution prevention initiative underway, interviewees always identified the support of their government through policy statements and the dedication of staff and budget as essential to the program's success.

Interviews with Alberta Environment staff and discussions during the workshop identified a number of issues.

- There was agreement that pollution prevention is seen as a proactive preventative approach aimed at avoiding waste or unnecessary environmental disturbance, although opinions varied on what should be defined as pollution prevention.
- There are numerous Alberta Environment initiatives currently underway that are complementary to a formalized pollution prevention program or that could assist in the development of a pollution prevention initiative.
- It was generally accepted that a formalized pollution prevention initiative must be established within Alberta Environment to meet the expectations of internal

government strategy commitments, keep up with industry leaders, and satisfy national commitments.

- Any pollution prevention program that is developed was seen as likely having both voluntary and mandatory components, and a comprehensive, rather than substance-specific, approach. The voluntary initiatives could provide for flexibility for the participants, while the mandatory component could contribute to the credibility of the initiatives or address poor environmental performers.
- There was general support in encouraging the participation of proactive and receptive industry groups through industry associations to develop memoranda of understanding (MOU's) aimed at pollution prevention implementation, as well as pursuing MOU's with Environment Canada.
- Once the program format is proposed, there should be a stakeholder participation component (both within Alberta government agencies that may have overlapping jurisdictions, and with industry and special interest groups) prior to program implementation.
- Numerous initiatives were tabled that could be further evaluated as to their feasibility for inclusion in the program.

The input obtained from Alberta Environment staff, the research information obtained, and the current state of pollution prevention programs nationally and internationally were all considered for the development of the following recommendations for the development of a formalized pollution prevention program for Alberta (estimates of priority are presented in brackets). It should be noted that these recommendations are based on the assumption that the development of an effective pollution prevention program is implemented in a timely fashion with all the support necessary to achieve this end:

Policy Development:

1. Prepare and distribute internally a policy statement (or equivalent indication of commitment), identifying the goals of an Alberta Environment pollution prevention program and supporting the timely implementation of the program within Alberta Environment (priority – near term);

2. Adopt the definition and interpretation of P2 used by the Ontario Ministry of Environment and Energy. This definition is compatible with both the CCME and Environment Canada definitions, and addresses resource conservation. This definition could also be modified to address the issue of 'environmental disturbance' (priority – near term);

Program Framework Development:

3. Develop program goals and objectives;

4. Prepare a discussion paper for external distribution presenting the rationale for implementing the program and describing the proposed program (priority – near term);

5. Present the discussion paper to Alberta government departments that may be affected by an Alberta Environment P2 Program. (priority – near term);
6. Incorporate comments obtained from the discussion paper presentations into a program proposal, which should be presented to industry and other stakeholders for their input and to solicit some industry associations to participate in informal partnerships (or Memoranda of Understanding, if deemed appropriate) with Alberta Environment (priority – near term);
7. Consider the feasibility of establishing policies respecting: 1) requiring Alberta government suppliers to have pollution prevention plans, and 2) requiring any major recipient of Alberta government funding to have pollution prevention plans. (priority – near term);
8. Develop the necessary technical and procedural guides (likely to be based on the approach taken by Ontario, structured on the EPA process) (priority – near term);
9. Assess the feasibility of pursuing Memoranda of Understanding, or alternative partnerships with industry groups (priority – near term);
10. Assess the feasibility of requiring the development and implementation of pollution prevention plans among the requirements to participate in a "Gold Club" concept that recognizes and rewards select qualified approval holders (and other qualified participants). (priority – near term);
11. Assess the feasibility of utilizing the expertise that the Action on Waste group has in program development and implementation (priority – near term);

Program Implementation:

12. Implement internal awareness training (education) to ensure a common understanding of the adopted concepts of pollution prevention, and the proposed program initiatives (priority – near to midterm);
13. Develop a similar education program for industry and the public to publicize the program and its benefits (priority – midterm);
14. Propose a pollution prevention category to be included in the Emerald Awards (priority – long-term);
15. Modify the Alberta Environment web page to include information on the pollution prevention program (initially respecting the program, and later providing information on initiatives, information sources, contacts, fact sheets and pollution prevention success stories) (priority – midterm);
16. Publicize the successes of the program (priority – mid- and long-term);

Program Monitoring:

17. Develop program performance monitoring criteria (priority – midterm); and
18. Monitor the effectiveness of the program, providing periodic reviews and improvements as needed (priority – long-term).

(Note – near term refers to a one to two year period; midterm refers to a two to three year period; and long-term refers to longer than three years)

The implementation of recommendations to be adopted will ultimately be dependent on the direction Alberta Environment decides to pursue for a formalized pollution prevention program. Factors such as manpower and budget will influence the overall schedule of activities in the program. It is likely that the initial emphasis will be on voluntary initiatives, but other strategies may also be pursued.

1 INTRODUCTION

1.1 BACKGROUND – THE POLLUTION PREVENTION CONCEPT

There is an on-going commitment in Canada toward implementation of the principles of sustainable development. Sustainable industrial development is compatible with environmental protection. An essential component of sustainable development is pollution prevention (P2). Pollution prevention aims to eliminate the source of the pollution rather than managing the waste once it has been created. This involves a change in focus from 'end-of-pipe' waste control to source reduction at the point of generation. Pollution prevention requires a cultural change in order to anticipate rather than react. Pollution prevention is not an add-on policy – it has the potential to completely change the strategy for environmental protection to a new deliberate, anticipatory and preventative approach, rather than a reactive one.

The essence of this new approach is presented in the following quote (June, 1993) from Carol Browner, U.S. Environmental Protection Agency (EPA) Administrator:

> 'When EPA was created in the early 1970's, our work had to focus first on controlling and cleaning up the most immediate problems. Those efforts have yielded major reductions in pollution in which we should all take pride. Over time, however, we have learned that traditional 'end-of-pipe' approaches not only can be expensive and less than fully effective, but sometimes transfer pollution from one medium to another. Additional improvements to environmental quality will require us to move 'upstream' to prevent pollution from occurring in the first place.'

Pollution Prevention Approach

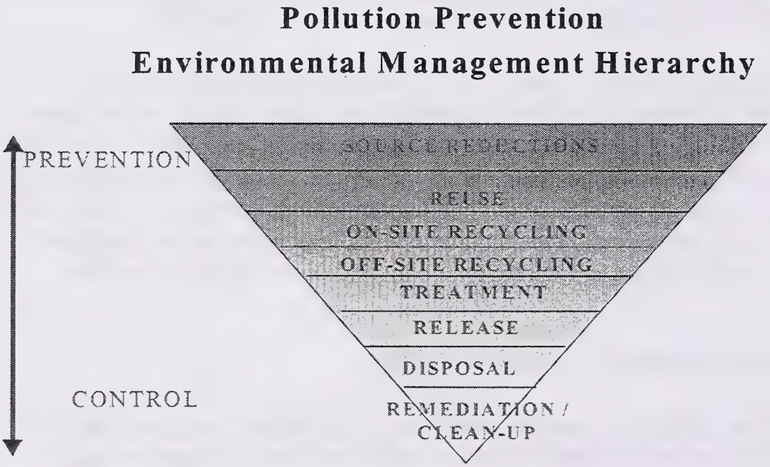
The generally accepted pollution prevention approach emphasizes the upper portion of the environmental management hierarchy (source reduction), with decreasing focus downward (recycling, treatment, disposal, and finally reclamation). Pollution prevention is not usually accomplished by placing a piece of equipment immediately ahead of a discharge point. Identifying good solutions often requires a high degree of technical expertise and creativity, and the solutions may need to be customized to the specific application. In other cases, P2 solutions are simple and have broad application. Pollution prevention activities have significant potential to result in improved efficiency of resource use, with a consequent reduction in the amount of energy required to process input materials. Retrofitting pollution prevention into an existing plant is generally found to be more expensive in achieving the same environmental benefits than initial installation at the facility design and construction stage.

Although most environmental management actions provide benefits, the greatest opportunities for reducing environmental or health risks and associated costs are at the top of the environmental Management Hierarchy (Figure 1.).

Partnerships between the governments and the private sector result in a broad and diverse spectrum of pollution prevention programs. Industry and businesses participating in these programs are finding both environmental and economic benefits from adopting pollution prevention processes and practices.

Change toward a pollution prevention approach can only occur if there is a philosophical shift in the approach to resource and waste management. This usually starts at the individual level and progresses upward through corporate and government levels. Sometimes the compliance approach is taken by governments to facilitate the shift of societal behavior.

FIGURE 1.



Factors Supporting Alberta P2 Program Initiation

Currently there are a number of drivers for the implementation of a formalized Alberta Pollution Prevention Program. Firstly, as expressed in the above quote of Carol Browner of the U.S. EPA, Alberta Environment recognizes the benefits of shifting its focus ‘upstream’. Alberta Environment has practiced pollution prevention informally for some time, and now recognizes that a formal pollution prevention program is necessary. Alberta has also made commitments to various other programs. As a member of the Canadian Council of Ministers for the Environment (CCME), Alberta is committed to their ‘Pollution Prevention Strategy’ and is responsible to implement initiatives in keeping with this strategy. Secondly, the newly revised Canadian Environmental Protection Act (CEPA) now contains a section that addresses Pollution Prevention, and the Federal government will soon be developing regulations and initiatives associated with that section, some of which may have an impact on activities within Alberta. Also, in 1998 the Clean Air Strategic Alliance (CASA) had agreed to incorporate the pollution prevention approach, as a principle and as a strategy, into the work of the Alliance. The Northern River Basins Study (NRBS) has also emphasized pollution prevention as a preferred method for implementation of its study recommendations. These (and others such as Canada-wide Standards, Canada-wide Acid Rain Strategy and CASA SO_2 Management) are all initiatives that commit Alberta to enhance its pollution prevention approach through a more formal program.

1.2 SCOPE AND OBJECTIVES

Alberta Environment is in the process of developing a formalized Pollution Prevention Program. The scope of this project was to provide a summary of the pollution prevention programs in other Canadian jurisdictions, assess the current application of the pollution prevention strategies by Alberta Environment, and in a workshop format present the research information. Based on the research and the outcome of the workshop, the study report presented and prioritized pollution prevention approaches that may be workable in Alberta.

The objectives of this project were to:

- Research available documentation and contact all Canadian jurisdictions to obtain information on their pollution prevention initiatives and program approach;
- Briefly research other country's pollution prevention initiatives;
- Interview Alberta Environment staff to characterize the current state of knowledge about pollution prevention and the level of application of pollution prevention strategies by the Department;
- Summarize and prepare a presentation of the research results;
- Organize and facilitate a one-day workshop presenting the research results and having open discussion with participants respecting possible approaches for Alberta Environment to take for their program; and
- Prepare a summary report of the research findings and the workshop discussions, presenting prioritized recommendations for the pollution prevention approaches that may be workable in Alberta.

1.3 METHODOLOGY

The initial available document research and interviews were undertaken in October and November, 1999. Two types of questionnaires were also developed, one targeting Alberta Environment staff and the other focussing on pollution prevention staff from other Canadian jurisdictions. Initial telephone contacts with staff from other jurisdictions introduced the project and requested any available documentation. These were followed with the telephone interviews. These telephone interviews aimed to obtain information on the type of pollution prevention programs and initiatives in place, the definitions and interpretations of pollution prevention used, any lessons learned, and the expected future direction of pollution prevention in their province. The detailed questionnaire used is presented in Appendix 1.

The interviews with the Alberta Environment staff were based on the questionnaire presented in Appendix 2. The intent of these interviews was:- to obtain an understanding of the current level of awareness of pollution prevention within the Department, to gather information on existing initiatives that would be considered pollution prevention, to identify any possible opportunities or constraints that might influence the ultimate formalized program, and to get input on the expectations from staff respecting the performance and goals of the program.

Subsequent to the research and interview component of the project, the resulting information was summarized and distributed to the Alberta Environment staff expected to attend the one-day workshop. The workshop commenced with a brief summary of the research information and then followed with directed discussions on the topics of:- basis for undertaking a formalized pollution prevention program, pollution prevention definition and interpretation, responsible individuals and commitment necessary for a successful program, and possible pollution prevention program format (approach, target audience, implementation schedule, etc.).

1.4 REPORT STRUCTURE

Section 2 of the report contains the background information on pollution prevention, it's history and evolution, and the summary of other jurisdiction initiatives (both Canadian and otherwise). The summary of the interview information with Alberta Environment staff is presented in Section 3. Section 4 summarizes the discussions of the one-day workshop, as well as some of the additional material presented during the workshop. Section 5 presents the summary of findings and recommendations for possible format options for the proposed Alberta Environment Pollution Prevention Program. In general, much of the detailed supporting information is presented in the Appendices.

2 Pollution Prevention Issues and Initiatives

2.1 POLLUTION PREVENTION DEFINITION AND APPROACH

The most widely used definition of pollution prevention in Canada is that established by the Canadian Council of Ministers for the Environment (CCME). The CCME also published its 'Strategy to Fulfil the CCME Commitment to Pollution Prevention' in May 1996, which presents its vision, mission and goals for environment departments and society respecting pollution prevention. The CCME definition states that pollution prevention is:

> *'The use of processes, practices, materials, products or energy that avoid or minimize the creation of pollutants and wastes, at the source.*
>
> *Pollution prevention promotes continuous improvement through operational and behavioral changes. Pollution prevention is a shared responsibility among governments and individuals, industrial, commercial, institutional, and community sectors. It focuses on areas such as:*
>
> - *Substances of concern;*
> - *Efficient use and conservation of natural resources;*
> - *Operating practices;*
> - *Clean production processes which create less waste;*
> - *Training;*
> - *Equipment modifications;*
> - *Process changes;*
> - *Materials and feedstock substitutions;*
> - *Product design and reformulation;*
> - *Product life-cycle; and*
> - *Purchasing practices.'*

The Government of Canada defines pollution prevention as:

> *'The use of processes, practices, materials, products or energy that avoid or minimize the creation of pollutants and waste, and reduce overall risk to human health or the environment.*
>
> *Pollution prevention techniques and practices focus on:*
>
> - *Substances of concern;*
> - *Materials and feedstock substitution;*
> - *Operating efficiencies;*
> - *On-site reuse and recycling;*
> - *Training;*
> - *Purchasing techniques;*

- *Product design;*
- *Process changes;*
- *Product reformulation;*
- *Equipment modifications; and*
- *Clean production.*

The Ontario Ministry of Environment and Energy defines pollution prevention as:

> *'Any action which reduces or eliminates the creation of pollutants or wastes at the source, achieved through activities which promote, encourage or require changes in the basic behavioral patterns of industrial, commercial, institutional, community and government generators or individuals.*
>
> *Pollution prevention includes practices that eliminate or reduce the use of hazardous and nonhazardous materials, energy, water, or other resources as well as those that protect natural resources through conservation or more efficient use.'*

In a May 1992 Memorandum from the U.S. Environmental Protection Agency (EPA), their definition of 'Pollution Prevention' was discussed. It indicated that the commitment to integrate pollution prevention as an ethic throughout EPA's activities is in accordance with the national policy presented in the Pollution Prevention Act of 1990. The memorandum identified that pollution prevention requires a cultural change by waste generators that anticipates and internalizes the real environmental costs. *Pollution prevention, as defined under the Pollution Prevention Act, means 'source reduction' and other practices that reduce or eliminate the creation of pollutants through:*

- *Increased efficiency in the use of raw materials, energy, water, or other resources; or*
- *Protection of natural resources by conservation.*

According to the Pollution Prevention Act, *'source reduction' is defined as any practice that:*

- *Reduces the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment, or disposal; and*
- *Reduces the hazards to public health and the environment associated with the release of such substances, pollutants, or contaminants.*

The term includes: equipment or technology modifications, process or procedure modifications, reformulation or redesign of products, substitution of raw materials, and improvements in housekeeping, maintenance, training, or inventory control.

Prevention is identified as including in-process recycling but not out-of-process recycling. Under the Act, recycling, energy recovery, treatment and disposal are not included within the definition of pollution prevention.

It is evident that there are subtle variations among the definitions. The major variations occur in the extent of specification of the following:

- source reduction as the only acceptable form of pollution prevention;
- the identification of conservation of natural resources as an important component;
- the exclusion of out-of-process recycling, energy recovery, treatment and disposal; and
- the specific pollution prevention activities listed within each definition.

The most comprehensive definition of the above is that presented by Ontario. This definition addresses the issues identified in both the CCME and Environment Canada definitions, as well as referring to the conservation of natural resources.

Ultimately, an increase in the specificity of the definition would have the potential to reduce confusion about its interpretation.

Interpretation of the Definition

It should be noted that numerous variations exist among different jurisdictions based on how the definition of pollution prevention is used and interpreted. Irrespective of the definition adopted, some regulators consider pollution prevention to apply strictly to source reduction, while others include recycling (on and off site), and possibly even give credit to the entire waste management hierarchy through to disposal and reclamation. *It is essential for any pollution prevention program to clearly indicate what activities are to be considered pollution prevention initiatives.*

Source Reduction Approaches and the Environmental Management Hierarchy

Source reduction consists of two components – product changes, and process changes. Product changes include product redesign for less environmental impact, and increasing product life. Process changes consist of input material changes, technology changes, and improved operating practices. Input material changes focus on material purification, or substitution of less toxic materials. Technology changes include activities addressing: layout changes, increased automation, improved operating conditions, improved equipment, and new technology. Improved operating practices include: operating and maintenance procedures, management practices, stream segregation, material handling improvements, product scheduling, inventory control, training, and waste segregation.

As indicated in the majority of the definitions for pollution prevention, source reduction is the essence of pollution prevention, and is represented as the most desired level of the environment management hierarchy (refer to Section 1.1).

Evaluating Pollution Prevention Opportunities

Pollution prevention opportunities can be effectively evaluated using the widely accepted standardized approach of developing a pollution prevention program, as summarized in the 1993 Ontario document 'Pollution Prevention Planning Guidance Document and Workbook'. This approach reflects the U.S. EPA methods presented in the 1988 'EPA Manual for Waste Minimization Opportunity Assessments' and the subsequent 1992 'Facility Pollution Prevention Guide'. The process essentially consists of preliminary information gathering and assessment, development of a site-specific pollution prevention opportunity assessment (P2OA) plan, detailed site assessment, followed with pollution prevention option identification, feasibility evaluation, and development of an implementation plan for the recommended options. This process is dynamic and must be periodically monitored, performance evaluated and the program revised as necessary.

Each Pollution Prevention Opportunity Assessment (P2OA) must be customized to any given site's issues and priorities, and areas such as halons (ozone-depleting substances), priority pollutants (e.g. polychlorinated biphenyls/PCB's), municipal waste, hazardous waste, energy, waste consumption, affirmative procurement may or may not be included, depending on the site's focus.

Pollution Prevention Program Benefits

Numerous benefits can be incurred by implementation of pollution prevention practices. These occur in the areas of environment, economics, health and safety, and community affairs. A summary of the major benefits is presented below:

- Minimization or avoidance of the creation of pollutants;
- Reduction in production costs through better management and efficiency;
- Avoidance of the transfer of pollutants from one medium to another by integrating decisions affecting land, air and water;
- Reduction of the risk of non-compliance;
- Acceleration of the reduction/elimination of pollutants through application of improved or innovative technology;
- Establishes compatibility with international, national, environmental, and trade agreements;
- Minimization of health risks;
- Enhancement of corporate image and community relations, and improves employee morale;
- Encourage the development of innovative new pollution prevention technologies;
- More efficient use of energy, materials, and resources;
- Minimization of the need for costly enforcement;
- Limits future environmental liability with greater certainty;
- Avoidance of costly clean-up in the future;
- Promotion of a more competitive economy;

- Reduction of on-site waste storage and treatment costs;
- Reduction of transportation and disposal costs;
- Reduction of compliance costs for permits, monitoring and enforcement;
- Lower risk for spills, accidents, and emergencies;
- Reduction of costs associated with employee health and safety programs;
- Potential income from sale or reuse of wastes; and
- Reduced risk to adjacent communities from accidental releases of toxics.

Some barriers to implementing pollution prevention initiatives are:

- Lack of an understanding of the potential environmental, economic, health and safety, and other benefits associated with implementation of pollution prevention initiatives;
- Lack of availability of capital for plant upgrades;
- Technical barriers, such as loss of product quality, inflexibility of process to change, lack of economical quantity of material for viable recycling or reuse implementation, or lack of suitable engineering information on source reduction and recycling techniques;
- Regulatory barriers, such as permit limitations to process modifications considered to be 'treatment', or limitations of the existing permit respecting waste storage;
- Attitudes, such as a fear of failure, or the 'if-it-ain't-broke-don't-fix-it' approach; and
- Industrial competition, whereby adherence to a pollution prevention approach could make the facility less economically competitive than others in the industry, i.e. the concept of a 'level playing field' may actually work against a company wishing to become more environmentally friendly.

2.2 POLLUTION PREVENTION CONCEPT EVOLUTION

Canada initially measured hazardous wastes in the early 1980's, largely based on data from the United States on waste generation per employee in a given industry. A federal study in 1988 set out to produce national generation estimates using actual Canadian data (national total annual hazardous waste generation was estimated at 6 million tonnes).

In 1991, the Canadian Council of Ministers of the Environment (CCME) adopted a target of 50% reduction in waste directed to landfills by the year 2000. In response, a new inventory was initiated to better estimate the generation in the selected baseline year (1991). The result was an estimate of 7.5 million tonnes annually for Canada in 1991. This estimate is being revised downward.

In 1995, the federal government issued it's document entitled 'Pollution Prevention – A Federal Strategy', directing efforts to avoid the creation of pollutants and waste, rather than managing them after they have been created. A 1996-97 federal progress report ‘confirms that pollution prevention has momentum, and that Canada is working toward becoming a sustainable society’.

Federal departments (both regional offices and national offices) are taking initiatives alone and in collaboration with such partners as the Canadian Center for Pollution Prevention, with encouraging results. In collaboration with many sectors of society, pollution prevention is being achieved through:

- Policies and legislation;
- Guidelines and regulations;
- Codes and standards;
- Management systems;
- Voluntary programs;
- Reporting mechanisms;
- Information and training; and
- Technology, research and pilot projects.

The federal Pollution Prevention Strategy aims to achieve the following results:

- Institutionalize pollution prevention across all federal government activities;
- Foster a national pollution prevention effort;
- Achieve a climate in which pollution prevention is a major consideration in industrial activities;
- Provide access to the information and tools necessary to implement pollution prevention practices; and
- Participate in international pollution prevention initiatives.’

The new Canadian Environmental Protection Act (CEPA) places a renewed emphasis on pollution prevention as the preferred strategy for achieving reductions in waste.

Pollution Prevention Progress in the United States

Pollution Prevention initiatives have advanced rapidly in the United States. Under the 1986 Emergency Planning and Community Right-To-Know Act (EPCRA), the U.S. developed the Toxic Release Inventory (TRI) to provide citizens with accurate information about the use of hazardous chemicals. The measurement program began in 1988, initially referred to as waste minimization. This was followed by the 1990 Pollution Prevention Act which required that facilities reporting according to the Toxic Release Inventory (TRI) requirements must also provide documentation of their procedures preventing release of or reuse of the specified chemicals. It also emphasized that the preferred method is source reduction or closed-loop recycling (treatment and disposal were the least desirable methods).

The majority of the States have enacted some type of legislation that incorporates pollution prevention requirements. Approximately 29 states had legislation in place in 1992 that addressed pollution prevention (see Appendix 3): currently there are more than 35 with this type of legislation in place.

Pollution Prevention Progress in Europe

In Europe, there have been many pollution prevention initiatives undertaken within the last ten years with significant industry participation.

The UK's Department of the Environment, Transport and the Regions, along with the Joint Environmental Markets Unit, have an initiative called the Environmental Technology Best Practice Program to promote better environmental performance. The program is attempting to raise awareness of opportunities for increased efficiency and cost savings through waste minimization and the use of cleaner technologies. In 1990, a grant program was established to promote innovation in environmental technology. A best practice program has been operating since 1989 targeting energy savings and CO2 reductions.

An extensive study has been developed by the European Commission (EC) regarding the status of Community Statistics on Waste (Commission of the European Communities (1992) Compilation of Community Statistics on Waste). The study identified lack of harmonization as a key issue, caused by varying scope, levels of detail and the classification used in the statistics compiled by European Union and European Free Trade Association countries. Another initiative, the European Community LIFE program, was the main source of EC funding for environmental initiatives throughout Europe. It ended in 1995 (renewal status unknown).

One of the earliest waste minimization projects was the Landskrona waste minimization study started in October 1987. This represented a voluntary industry study with the intent of improving facility performance. Similar to the Landskrona study, Holland performed the PRISMA study in 1988, involving 10 companies. The Bayer Leverkusen study, based on total site pinch analysis, was performed to reduce combustion related emissions.

Other international agencies have conducted surveys on waste: the OECD Environment Directorate maintains a database on resources and the environment (SIREN) based on surveys of member countries (including generation data for hazardous wastes), and the International Maritime Organization (IMO) has undertaken a 1992 Global Waste Survey.

2.3 SAMPLE POLLUTION PREVENTION INITIATIVES OUTSIDE CANADA

A review of pollution prevention planning in other jurisdictions was prepared by ICF Kaiser Canada (March 1998) as part of the B.C. Pollution Prevention Pilot Program. The following is a summary of the six different programs that were reviewed. Information was gathered for the ICF Kaiser report on six jurisdiction P2 programs, including:

- U.S. EPA StarTrack Program, New England, USA;
- Multi-media Permitting Project, New Jersey, USA;
- Minnesota Environmental Regulatory Innovation Act, Minnesota, USA;
- Victoria EPA Accredited License, Victoria, Australia;

- U.S. EPA Project XL and Intel Permit, Arizona, USA; and
- Strategic Environmental Management and the Voluntary Initiative for Pollution Prevention, Pennsylvania, USA.

Brief descriptions of the programs are presented in Appendix 4. Findings of the ICF Kaiser review are summarized below:

- Programs are voluntary and generally complement existing regulatory requirements. Where a controlled program entry process exists, the participants usually benefited through increased flexibility (within the regulations);
- There was generally a pilot or test phase to the projects. A number of programs have had difficulty moving out of the pilot phase into full implementation phase;
- Significant incentives to participants are needed to encourage participation in the voluntary programs;
- Some form of reporting was required of participants;
- It was seen to be important to have pollution prevention projects open to the public, especially in situations where regulatory flexibility was granted;
- Although voluntary in the nature of the entry into the program, once a company is in the program there are usually mandatory elements that are enforceable;
- Varying degrees of regulatory flexibility were usually negotiated before the process began, and periodically reviewed through the process;
- The programs included varying degrees of stakeholder or public participation. High levels of stakeholder/public participation may increase delays, or create confrontational situations that delay the process and do not resolve any significant issues. Stakeholder/public participation processes are also costly in time and resources, although they are generally worthwhile to improving relations;
- The main reasons for regulatory bodies to implement these initiatives are to promote environmental innovation, and to increase resource efficiencies by simplifying permitting/inspection/reporting requirements; and
- The main reasons for industry to participate in these initiatives are simplification of the permitting process and possible increase flexibility associated with the permit requirements.

2.4 CURRENT POLLUTION PREVENTION INITIATIVES ACROSS CANADA

Telephone interviews were held between October and December 1999 with the various federal and provincial regulatory staff responsible for pollution prevention programs or initiatives in the various provincial and territorial jurisdictions across Canada. Questions (see Appendix 1) were asked to obtain information about the existence of formalized pollution prevention programs, the definition for pollution prevention referenced, the nature of the program(s), past implementation problems and lessons learned, and future program expectations. Table 1 summarize the various programs and comments conveyed during these interviews, as well as draft information obtained from the CCME.

More descriptive summaries of the various jurisdictions' pollution prevention initiatives are presented in Appendix 5.

There are a few trends noted from the discussions with Canadian provincial pollution prevention representatives. These are:

- Predominantly informal and voluntary programs, with the exception of the product stewardship initiatives;
- Reference is usually made to the CCME definition of pollution prevention, although there is substantial variation in the interpretation of that definition;
- Provinces with a small population or industry base do not expect to implement a formal program, since their dealings with industry are very customized and personalized (one-on-one); and
- Where there is a formalized pollution prevention program, there is some type of performance tracking implemented.

Table 1. Summary of Canadian Provincial Pollution Prevention Initiatives

	FORMAL P2 PROGRAM	P2 DEFINITION USED	PILOT PHASE	CURRENT PROJECTS	RESPONSIBLE DEPARTMENT	DEDICATED STAFF	PAST PROBLEMS ENCOUNTERED	SUGGESTIONS AND ADDITIONAL COMMENTS
NWT	No	None specified	NA	-none currently active -had a partnership with Environment Canada and the NWT Chamber of Commerce (education and funding) -a Northern Pollution Prevention Award program	Environmental Protection Service	None	NA	-implementation has been through a number of small voluntary programs
Yukon	No	CCME	NA	Solid and hazardous waste management, pesticides, and ozone depleting substances	Environmental Protection Branch, Department of Renewable Resources	None	NA	Priorities in Yukon focus on social issues
B.C.	Yes	No specific definition	Yes	-MOU (1995 – project now completed) for voluntary pilot project to demonstrate the feasibility of P2 as an alternative to existing permit system	Pollution Prevention and Remediation Branch, B.C. Ministry of Environment, Lands and Parks	45 in Branch (addresses issues other than P2 as well)	-manpower and financial resources -education and training (need experts to guide process) -changes in the economy -competing government priorities	-retain existing permit system, but consideration should be given to a combination of regulations and P2 planning authorizations for certain situations -voluntary program, but mandatory components exist for facility discharges -program needs continued support from the government
Alberta	No	To develop	NA	-include waste minimization description in approvals -P2 team established in 1998	Environmental Sciences Division,	5 employees assigned to	None identified	A formalized P2 program will be established in the near

	FORMAL P2 PRO-GRAM	P2 DEFINITION USED	PILOT PHASE	CURRENT PROJECTS	RESPONSIBLE DEPARTMENT	DEDICATED STAFF	PAST PROBLEMS ENCOUNTERED	SUGGESTIONS AND ADDITIONAL COMMENTS
				-waste minimization guidelines and fact sheets developed -to date, focus has been on recycling	Alberta Environment	P2 related activities		future
Sask.	No	Environ-ment Canada	NA	-adopted P2 as a guiding principle -formal and informal partner-ships (voluntary)	Saskatchewan Environment and Resource Management	None	-education of the public and industry -difficult to isolate P2 initiatives from other environmental programs	Plans to develop more P2 activities, but likely to remain voluntary and focus on education and MOU's
Man.	Yes	CCME	Small pilot (one compa ny for one year prior to current pro-gram)	-MOU's (major one is with the Alliance of Manufacturers and Exporters Canada-Manitoba Division)	Pollution Prevention Branch (established in 1993)	Eight to ten staff	-industry skepticism to have regulators lead program -senior management resistance -shortage of practical expertise for program implementation	Ensure the credibility of the program
Ontario	Yes	Ontario Ministry of Environ-ment	No	-P4 (Pollution Prevention Pledge Program) – voluntary P2 partner-ships with industry members -numerous MOU's	Partnerships Branch, Ontario Ministry of the Environment (reorganized from the Pollution	Yes	-isolation of pollution prevention from other environmental issues (it initially focussed on external	-P2 is bounded by the facility -voluntary -to develop alternative policy tools to improve environmental performance -a hazardous waste fee

	FORMAL P2 PRO-GRAM	P2 DEFINITION USED	PILOT PHASE	CURRENT PROJECTS	RESPONSIBLE DEPARTMENT	DEDICATED STAFF	PAST PROBLEMS ENCOUNTERED	SUGGESTIONS AND ADDITIONAL COMMENTS
					Prevention Office, established in 1992)		implementation, rather than including a change in department outlook) -P2 was dealt with separate from hazardous waste and toxics (now seen that these groups should work together	program is to be implemented in the immediate future - Try to 'tilt' the playing field in favour of environmentally proactive companies
Quebec	No	None specified	NA	-Industry specific pollution reducing operating practices fact sheets -an Enviro-Club jointly funded with Environment Canada to assist with industry specific P2 reviews	Ministere de l'Environ-Nement	None	None identified	None
Nfld.	No	None specified	NA	None	Pollution Prevention Division, Department of Environment and Labour	20 in Division in total (Division responsible for other issues as well as P2)	-No specific regulations addressing hazardous waste management -small population and industry base	If a formalized P2 program would develop, likely to be voluntary, with phased implementation and stakeholder participation.
PEI	No	None specified	NA	-progress made in solid waste management (65% landfill diversion)	Department of Technology and	None	NA	-small population and limited heavy industry -deal with issues on a

	FORMAL P2 PRO-GRAM	P2 DEFINITION USED	PILOT PHASE	CURRENT PROJECTS	RESPONSIBLE DEPARTMENT	DEDICATED STAFF	PAST PROBLEMS ENCOUNTERED	SUGGESTIONS AND ADDITIONAL COMMENTS
					Environment			case-by-case basis -P2 expected to become a new action item pursued by existing staff (that previously managed landfill duties, now handled by another manager) -likely to be voluntary, and 'personalized'
Nova Scotia	Yes	CCME	No	-currently voluntary -focus on recycling -several MOU's in place	Pollution Prevention Section within Environment Department	Three fulltime staff, with associated budget	-primarily related to government funding (voluntary programs likely the first to get cut)	-revisions to the regulations expected within a year to allow for a requirement for P2 Plans -eventual baseline establishment with associated reduction goal and target date - Implementation of the P2 program would have been impossible without the support received in both staff and budget
New Bruns.	No	None specified	NA	Include the P2 concepts in it's environmental activities – encourage adoption of P2 techniques by industry	Department of the Environment	None	NA	None

3 ALBERTA ENVIRONMENT STAFF INTERVIEW RESULTS

Numerous interviews (25) were held with Alberta Environment staff during November 2, 15-19, 22, 23, and 25, 1999. The interviews generally addressed the questions presented in the appendix: open discussion of all pollution prevention subjects was also encouraged and provided much useful information. The intent of these interviews was: to gain an understanding of how pollution prevention is currently perceived within Alberta Environment, how it is seen to best fit into the current structure and activities, its goals, and to assist in identification of opportunities and some possible constraints that would contribute to the ultimate form of a formalized pollution prevention program for Alberta Environment. The following sections summarize the results of these interviews.

3.1 EXISTING POLLUTION PREVENTION AWARENESS AND CURRENT PROGRAM APPLICABILITY

Pollution Prevention Definition and Perception

Some individuals interviewed had a broader understanding of what pollution prevention is than others. The majority considered source reduction and on- and off-site recycling to be within the definition (generally referring to CCME). A few considered only source reduction to be applicable and some others would not consider off-site recycling to apply.

There were also a number of individuals who equated pollution prevention with pollution control, considering all activities in the waste management hierarchy to be considered pollution prevention.

Current Application of Pollution Prevention in Alberta Environment Programs

Generally, the majority of interviewees referred to the current approvals as incorporating a section for waste minimization/pollution prevention discussion (section 3(1) i of the Approvals Regulation). Reference was also routinely made to the ‘Action on Waste’ program, although it was also identified as focussing on municipal solid waste and addressing primarily recycle initiatives. A few individuals made reference to specific initiatives related to waste water and energy efficiency. Many comments were received that considered pollution prevention to be an underlying principle within all Alberta Environment activities. Alberta Environment also encourages the application of pollution prevention through its CCME activities, such as the Canada Wide Standard development.

Drivers for Implementation of a Pollution Prevention Program

Many interviewed were not familiar with why the Department is pursuing the development of a formalized Pollution Prevention Program for Alberta Environment.

Many were aware of the CCME commitment toward pollution prevention but did not extend that to the requirement for Alberta Environment to comply with this initiative.

Of those aware of the various outside factors encouraging the development of a Pollution Prevention Program, the following were identified: CCME Pollution Prevention Strategy, Clean Air Strategic Alliance (CASA), and Canadian Environmental Protection Act (CEPA) revision implication initiatives to address pollution prevention and continuous improvement, and international trade competitiveness.

Existing Policies Addressing Pollution Prevention

There was a consensus among those interviewed that there are no formalized policies specifically addressing pollution prevention. Reference was made to a recent Premier's policy statement ('Alberta Strategy for a Sustainable Environment') indicating that Alberta would attain high standards in environmental issues, but specific reference was not made to pollution prevention. Many interviewed also referred to a current project that is investigating innovative alternatives to the current approval approach. The results of that study may influence the future form of the approval, which could facilitate inclusion of pollution prevention initiatives.

3.2 EXPECTATIONS OF THE POLLUTION PREVENTION PROGRAM FORMAT

Responsibility within Alberta Environment

There was consensus on this point and the Environmental Sciences Division was identified as the group responsible for the planning, development and training associated with any developed Pollution Prevention Program. It was also indicated that the ultimate implementation of the program would occur at the regional level. Consequently, training would be required both of the industries affected, and of internal Alberta Environment staff (both at headquarters and in the regions).

Voluntary or Mandatory Nature of Program

There was substantial variety in the opinions related to whether the program should be voluntary or mandatory. The initial preference appeared to be to have it voluntary, or to have it voluntary for 'the good players' or the non-approval industries. While the initial approach was preferred to be voluntary, many indicated that a combination of voluntary and mandatory components would work best for the program. In this scenario, the mandatory components were most often seen to apply to current approval holders. An additional consideration was the fact that the legislation would need to be changed if non-approval industries would be targeted for mandatory programs, as it is currently not possible through the existing legislation. Codes of Practice may be an alternative to approvals.

Target Audience

The most frequently referred to target audiences were the approval holders and industry associations. Additional targets included:

- non-approval industries
- industries that require registration
- municipalities;
- large industries;
- hospitals;
- the government (lead by example); and
- universities/educational institutions.

Infrastructure Needed to Support Program

There was a definite split in the responses about program support needs. Most individuals indicated that, for a successful program, dedicated staff with an associated operating budget would be required. Estimates of required staff ranged from one to six. This is in keeping with the information obtained in discussions with other provincial pollution prevention regulators. Some Alberta Environment staff interviewed indicated that some specific pollution prevention expertise necessary to support the program could be derived from the use of contractors. There were also other comments that the bulk of the staff needs would be for the initial period of the program development (planning, guide development, consultations, education, and implementation), and that once the program is self-sufficient the staff requirements would be expected to drop.

Discussions with upper management indicated, however, that any pollution prevention program to be developed would likely need to 'make do' with the available resources.

Through the interviews, it was also indicated that some formal, written commitment from senior Alberta Environment staff was required to show that the government is in support of pursuing the initiative. This written commitment was generally suggested to come from the Assistant Deputy Minister, or as a policy statement developed by the government Standing Policy Committee.

Existing Programs Complementary to a Pollution Prevention Program

The most often referred to existing activities that could complement a Pollution Prevention Program were the approvals and the 'Action on Waste' program. The approvals provide an existing route to apply pollution prevention initiatives to approval holders, since the existing legislation currently requires that waste minimization activities be discussed in the approval applications. This could easily be elaborated upon. The 'Action on Waste' program has gone through the entire program development process, focussing on municipal waste through application of the '3 R's' (reduce, reuse, and recycle). It has gained much practical experience in the areas of program development, industry consultations, education program development, and recycling. This expertise would prove useful to the development of a Pollution Prevention Program that would address hazardous wastes and source reduction, as well as recycling.

Alberta Environment and Industry Program Responsibilities

Alberta Environment was seen to be responsible for program development, guidance document development, education of those affected, and implementation of the program. Industry's responsibilities included bearing the costs of the industry side of the required research into pollution prevention technologies, as well as input into the program development.

Availability of Applicable Information In Alberta Environment

There were mixed opinions as to the availability of applicable information within Alberta Environment. There was acknowledgement that waste related information was available but it's accessibility was not thought to be very great, nor was the completeness of the required information (such as production related information necessary for baseline standardization, if reduction tracking is to be done). Numerous annual reports are also available for some industries, but they are generally media specific and located in many different areas within the department.

Consequently, it was generally agreed that the information required would need to be provided by the industry participating in the program.

Expected Program Deliverables

The Pollution Prevention Program deliverables would likely be: initial program development proposal, stakeholder consultations, technical and procedural guide development, development of education programs (targeted to headquarters, regions, and industry participants), monitoring and reporting requirements, possible report consolidation with other reporting requirements, and staff dedication for program implementation.

Stakeholder Participation Need

There was general consensus that some form of stakeholder participation was necessary. It was usually seen to occur after the initial program form and approach was developed by Alberta Environment, and the likely target audience was seen to be industry associations, or key industry contacts (possibly utilizing the CASA stakeholder forum, if available). Some reference was made to including groups such as special interest groups, municipalities, and possibly the public. There was one suggestion that the consultation occur before the program was developed. Other comments addressed the need for proper coordination of the consultation process to ensure that it maintains its focus.

Pilot Stage Necessity

Most comments on this issue suggested that the initial program participant would be like a pilot for the program, and that refinements could be made at this stage. That would then automatically lead into the full program, without a formalized pilot stage. Most saw a formal pilot stage an unnecessary.

Program Incentives/Disincentives

Numerous suggestions were received as possible incentives for participation in the program. These included faster approval process times and decreased environmental liabilities. Although some identified a grant or fund type initiative, it was indicated to be unlikely that the current situation would permit that option. Other incentives identified included the concept of a "Gold Club", where successful participants that became club members would gain increased flexibility with respect to their approval and its conditions. They may also benefit from reduced approval fees and reduced reporting requirements. Additional incentives included operating cost savings, and good public relations.

Identified disincentives included increased regulatory controls, less flexibility due to the increased prescriptive approach, and increased reporting requirements.

3.3 SUMMARY OF INTERVIEW ISSUES RELATED TO THE POLLUTION PREVENTION

Consensus was evident through the interview process on the following issues. There is currently no formalized Alberta Environment policy specifically addressing pollution prevention. The Environmental Sciences Division is responsible for the development of a formalized pollution prevention program. Program implementation will include both head office and regional level activity; and some type of stakeholder participation is necessary. All other points of discussion identified in Sections 3.1 and 3.2 had varying degrees of agreement. The key points requiring finalization before an effective pollution prevention program can be developed are: identification of the specific pollution prevention definition and it's interpretation, program goals, and the desired balance of mandatory versus voluntary approaches within the program.

4 WORKSHOP CONSULTATION WITH ALBERTA ENVIRONMENT STAFF

The Alberta Environment staff that had been interviewed was invited to attend the January 19, 2000 day long workshop. This workshop was held with the intent of providing an initial review of the results of the research and interviews done to date, and increasing the awareness and understanding of pollution prevention concepts. There was also discussion of issues critical to the development of the proposed Pollution Prevention Program format and approach. The workshop was also intended to provide a platform where all participants could become aware of each other's concerns and understanding of the issues. The desired outcome of the workshop was to obtain a consensus or convergence from the participants with respect to the definition and interpretation to be used, the approach to take, action items needing to be done, and the priorities for initial program implementation. Open discussion of all the critical issues was accomplished and many potential action items and program components were identified, even though overall consensus was not attained.

The following sections summarize the key points of discussion from the workshop, along with some additional material presented during the workshop.

4.1 WORKSHOP DISCUSSION SUMMARY

The workshop commenced with introductory remarks from Doug Tupper, Assistant Deputy Minister, Alberta Environment. In his remarks, Mr. Tupper emphasized the importance of attaining the necessary change in attitude that is essential to pollution prevention, both for regulators and industry. This attitude change will likely be achievable with determination and cooperation within the Department, and communication with stakeholder groups. The program itself is only a tool and will not be successful without the accompanying attitude. He also identified the importance of having a clear understanding of the desired program results while planning the program.

Following Mr. Tupper's introduction, there was a brief presentation summarizing the results presented in previous sections of this report. The balance of the morning was facilitated discussion with the workshop participants respecting:- the rationale behind program formalization, the definition of pollution prevention and it's interpretation, who needs to be involved, and the commitment necessary for a successful program. The afternoon started with a presentation of examples of other jurisdiction's pollution prevention initiatives and approaches to program development and implementation. This led to facilitated discussion about the possible approach, target audience, and priorities of a proposed pollution prevention program.

The summary of the discussion points is presented below.

Rationale for the Development of a Formalized Pollution Prevention Program

Alberta Environment has been applying the pollution prevention principle through the environmental management framework within Alberta Environment as opportunities presented themselves (primarily through the approvals application process, 'Action on Waste' waste minimization guidance, and wastewater programs). A pollution prevention team was established in 1998, with a goal to combine current pollution prevention activities with new pollution prevention initiatives. To date, tangible benefits have not been as forthcoming as desired, resulting in the need for a more formalized pollution prevention approach.

Workshop discussion on this topic identified the CASA initiative as one of the major external pollution prevention initiatives influencing the development of an Alberta Pollution Prevention Program. The application of the newly revised CEPA, containing pollution prevention as an underlying theme, was also identified as a major external factor in that there should be harmonization with federal and provincial pollution prevention initiatives. These two programs were identified as the most significant external motivators. It was also mentioned that CASA could provide a good point of contact with the environmental non-governmental organization (ENGO) stakeholders for input into the program development process.

Issues were also identified dealing with perception. The Alberta government has a commitment to recognize 'good actors' through the province's Sustainable Development Strategy. Alberta Environment would further improve its' image with the proposed development, promotion, and optimization of a successful pollution prevention program.

Key players in industry are already implementing their own pollution prevention programs. Some do so through influence of their head offices in the United States, while others have simply recognized the economic value of effective management of their wastes. There is also a global movement toward the implementation of pollution prevention and sustainable development initiatives.

It was indicated that the program could be used to acknowledge productive initiatives of industry.

Concerns were raised about the terminology used, i.e. program vs. initiatives. It was also questioned as to what is the program attempting to accomplish (the answer to this would refer back to Mr. Tupper's identification of the overall change in attitude and approach to waste management inherent with the pollution prevention approach).

Additional discussions were held about reasons supporting a choice not to pursue a pollution prevention program, i.e. maintain the status quo. These reasons included:- it's already being done, industry is doing it anyway, the lack of clarity around the definition, the name itself is seen to be negative, the demands it would place on the existing manpower, the internal and external resistance to the prerequisite attitude change, there are better alternatives (i.e. industrial ecology, cleaner technologies), the potential for jurisdictional overlap and conflicts, uncertainty as to whether pollution prevention is the best way of achieving the desired results, and the interface problems with existing activities.

Pollution Prevention Definition and Interpretation

A number of other jurisdiction definitions of pollution prevention were presented (as identified in Section 2.1), and discussion was held over which was most appropriate for Alberta to adopt. The discussion focussed on the CCME, CEPA and EPA definitions. It was noted that both CEPA and the Alberta legislation define ‘environment’ in the same way.

Questions arose about the inclusion of an ‘at the source’ versus a ‘life cycle’ approach to waste reduction. There was also discussion about the inclusion of a clause addressing ‘risk to the environment’, and how to include the issue of ‘environmental disturbance’. The EPA definition was the only one that addressed ‘increase efficiency’ of operations. A broad definition of ‘risk’ was also seen to be appropriate. Discussion raised other related initiatives, such as industrial ecology, by-product synergy, and sustainable development, and questioned whether these should also be addressed.

The point was raised that there must also be enough flexibility inherent in the interpretation of the definition to acknowledge all positive actions, but it was also agreed that pollution prevention activities focussed on the upper end of the environmental/waste management hierarchy. There was a ‘gray’ area identified relating to whether recycling (on- and/or off-site) should be included in the interpretation of a pollution prevention activity (or if these activities constitute pollution control, rather than pollution prevention). This would require further resolution during the selection of an appropriate definition.

The upcoming application of the newly revised CEPA was raised, leading to the suggestion that harmonization with their definition and interpretation would have merit.

It was identified that the proposed definition and interpretation would require internal circulation for comments, and consultation with stakeholders. Some of the stakeholder input could be solicited through CASA. There seemed to be the highest degree of comfort with adopting a modified Environment Canada definition for pollution prevention, so as to address the issue of ‘environmental disturbance’. This approach was expected to also satisfy the CCME requirements, as the modified definition would exceed the scope of the CCME definition.

Although discussion did not progress to the issue of interpretation of the definition, since consensus could not be attained over the definition to use, it is important to describe the interpretation along with the ultimately chosen definition.

Responsibility for the Pollution Prevention Program Development and Implementation, and Necessary Commitment

There was not much discussion over this point, as it was clear that the program development and initial implementation was the responsibility of the Environmental

Sciences Division, while the ultimate implementation would be the Regions' responsibility.

Other discussions included comments about the necessary commitment for a successful program. It was generally agreed that a senior Department member provide a written policy in support of the Pollution Prevention Program, if the necessary attitude change is to be accomplished. The point was also raised that 'If they can issue a written policy on the United Way, why not provide one supporting pollution prevention and waste minimization?'

Proposed Alberta Environment Pollution Prevention Program Format

A number of existing activities were identified that could be considered complementary to or become components of a formalized pollution prevention program. These existing activities included:-

- the requirement for approval applicants to use best available technology (BAT) within specified environmental limits;
- the approval and environmental impact assessment (EIA) application requirement for waste minimization information to be submitted;
- the 'Action on Waste' program;
- product stewardship regulations in place (e.g. beverage containers, tires);
- approval flexibility to recognize and track pollution prevention related activities;
- wastewater pollution prevention review;
- municipal best management practices (BMP) review to minimize releases; and
- emission inventories (relative indicators only – actual pollution prevention effects need more direct measurement).

Some observations were made respecting the overall perception of Alberta Environment or the pollution prevention program. It was suggested that Alberta Environment may be seen as 'being in the way of progress'. The pollution prevention program was also identified as one possible alternative to the current regulatory approach. The promotion of pollution prevention could be used as an incentive program, e.g. a 'Gold Club', with benefits being reduced monitoring and simpler approvals. In order to 'qualify' for these benefits, a participating company would need a good track record of voluntary actions and good environmental performance, have undertaken a public consultation process, and have the necessary resources and commitment for program implementation. The program could be one method of facilitating a level playing field for industry trying to be environmentally proactive, or even 'tilt' the playing field in their favor. If an awards or recognition program is part of the Alberta Environment pollution prevention program, it would be important that the recognition is site-specific, rather than applicable to the company as a whole.

Subsequent workshop discussions focussed on generating hypothetical lists of likely target audiences and associated initiatives, along with estimates of their priority.

Possible applications of voluntary or mandatory approaches were also hypothesized. These are summarized below:

1. Approval holders – seen to be a high priority, with a combination of a mandatory and voluntary approach. The mandatory approach could require a pollution prevention plan as an approval condition (Alberta Environment would need to develop a guideline). This could require an inventory of actions that have been taken and the associated results (i.e. performance tracking). Another option was to add pollution prevention to the VCR (Voluntary Challenge Registry) reports. Consideration could also be given to the introduction of a pollution prevention regulation that could be similar to the Approval Procedures Regulation and to harmonize with CEPA. Voluntary initiatives focussed on the concept of a 'Gold Club', where interested companies could be required to satisfy a number of prerequisites prior to attaining the 'Club' benefits.

2. Industry Associations – these were seen to be of moderate to high priority. Approaches could include:- memoranda of understanding, target 'receptive' industry groups to participate in the program, revise the voluntary Codes of Practice to include a pollution prevention requirement, development of sector-specific guidelines (e.g. printing, electroplating, etc.), or input into the Dow Jones Sustainable Development Index.

3. Government Procurement (suppliers) – this was identified as a high priority, likely requiring a mandatory approach. There was seen to be a need to raise the awareness for government managers with respect to encouraging suppliers to implement pollution prevention initiatives. Pollution prevention was also identified as one of the four current government priorities.

4. Municipalities, Universities, Schools, and Hospitals (MUSH's) – identified as a high priority. One suggestion was that a pollution prevention requirement could be included as a condition of a grant, in which case it would take on a mandatory nature. There were also suggestions that a policy statement to support this grant 'condition'. The concept of a revolving fund was also raised, where the grants issued would be fed by input from savings after initiative implementation. Connection with the provincial 'green' designation programs was suggested, where a company would need a pollution prevention program to be considered 'green'.

5. Code of Practice Companies – these were seen as a low priority that might be amenable to a mandatory approach. Suggested initiatives included Code amendments so as to require pollution prevention plans, and the provision of appropriate training/education and information.

6. Activities Regulated by Other Alberta Government Departments – these departments included Agriculture, Food, and Rural Development (AFRD), Alberta Resource Development (ARD), Alberta Infrastructure (AINFRAS), the

Energy and Utility Board (EUB), Alberta Learning (ALEARN), Alberta Health and Wellness (AH&W), and Alberta Innovation and Science (AI&S). Suggested approaches included memoranda of understanding, government policy, joint actions (e.g. the Anti-Tampering legislation), review of legislation and regulation, and pollution prevention promotion.

7. Public – a high priority was placed on these initiatives, which included:- information distribution, publication of information, awareness (similar to the approach taken by 'Action on Waste'), support of 'eco-efficient communities', and evaluation of the implementation of market-based instruments (e.g. user-pay).

8. General Programs Applicable to All of the Above: discussed options included:- inclusion of pollution prevention as an element of the Emerald Awards, development of a recognition program, addition of pollution prevention to the Web page (e.g. information clearinghouse, and pollution prevention promotion), adopt/adapt strategies from other jurisdictions, develop a pollution prevention discussion paper identifying what it is and why it is so important, incorporate pollution prevention into the environment department/division business plans, encourage a regional approach, develop guidelines and training modules, develop an inventory of all hazardous waste sites, and perform a sector/industry-specific review of waste management practices (e.g. develop a memorandum of understanding with Alberta Environment, universities, and industry associations for a directed student research initiative to provide industry waste management information and evaluate waste reduction alternatives). It was also indicated that a discussion paper presenting the proposed pollution prevention program should be developed for use in internal presentations and in stakeholder consultations.

These points were raised during the 'brainstorming' session in an attempt to identify possible approaches that could be considered, but would require additional evaluation prior to inclusion in a formalized pollution prevention program.

4.2 PROGRAM DEVELOPMENT STEPS, AND EXAMPLES OF OTHER JURISDICTION POLLUTION PREVENTION INITIATIVES

As a guide through the afternoon discussions respecting possible approaches for a pollution prevention program, the following material was presented as a review of steps involved in the implementation of any new program:

Policy Development:

- Get formalized commitment and management policy statement.

Program Framework Development:

- Establish program goals and format (evaluate the three program elements (education, technical, and regulatory) for program inclusion) ;
- Identify target audience, groups or pollutant streams for priority attention; and
- Submit proposed work program (activities, timetables, budget and other requirements).

Program Implementation:

- Select teams for program detailed development and implementation;
- Develop guides and education tools;
- Coordinate with any other government groups regulating target audience; and
- Propagate appropriate organization culture.

Program Monitoring:

- Establish program monitoring system; and
- Implement program and monitor performance.

The existing pollution prevention programs reviewed usually have the following components:- educational initiatives, technical assistance initiatives, and regulatory initiatives.

Educational initiatives are generally seen to be:

- Voluntary and the easiest of the options;
- A good starting point, since it costs less than the other two alternatives;
- Examples include conducting training workshops, and developing information materials;
- Outside groups (e.g. industry associations) could be encouraged to sponsor as many programs as possible; and
- The government usually acts as a catalyst and coordinator.

Technical assistance initiatives usually:

- Require more budget, but gives significantly more lasting results;
- Are voluntary;
- Are either a one-on-one or industry association driven initiative; and
- Examples include: information clearinghouse, technical workshops, conferences, guides developed with industry associations, contact during approval application process, contact during enforcement activities, or direct informal contact.

Regulatory initiatives may have:

- Direct regulatory requirements – examples include hazwaste minimization planning requirements (P2OA's), identification of P2 technologies in use, recycling requirements, employee training requirements, or local government internal directives;

- Indirect regulatory requirements – examples include aggressive enforcement of existing pollution control regulations, development of more stringent pollution control laws, or application of pollution control to SME's; and
- Positive incentives – examples include modified fee structures, reduced procedural requirements (less monitoring or reporting), or reduced fines.

The following examples were presented prior to the 'brainstorming' of program ideas, since they represent pollution prevention initiatives that have been successfully implemented in other jurisdictions:

- Internal task force;
- P2 supporting policy statement;
- Establish education program;
- Encourage local businesses;
- Targeted written requests to participate in program;
- Recruit staff;
- Compile success stories;
- Publicize accomplishments;
- Work with media;
- Declare a P2 week;
- Host a P2 Fair/Conference;
- Public education;
- Develop a resource library and staff;
- Conduct workshops (awareness and technical);
- Compile/develop and distribute guides and information documents;
- Newsletter/web page;
- Video presentations;
- Financial assistance;
- Create economic incentives;
- Facilitate cooperative ventures (e.g. MOU's with industry associations);
- Develop an internal waste reduction program; and
- Incorporate P2 into purchasing policies.

4.3 SUMMARY OF WORKSHOP DISCUSSIONS

The discussions held during the workshop provided good direction on the next steps necessary for the development of a formalized pollution prevention program. These discussions also provided attendees with a broader understanding of the pollution prevention concepts and issues needing resolution. Convergence was achieved respecting the definition of pollution prevention to adopt or develop, with emphasis placed on harmonization with the Environment Canada approach customized to address the issue of 'environmental disturbance'. There was also general support for early voluntary actions to be initiated. The feasibility of various mandatory actions should also be evaluated. Partnerships, such as with Environment Canada, CASA, and other industry groups, were also indicated as beneficial mechanisms to pursuing pollution prevention goals.

5 SUMMARY AND RECOMMENDATIONS

SUMMARY OF INTERVIEW FINDINGS

As a result of the discussions with other Canadian jurisdiction pollution prevention representatives, there were a few Canadian trends noted. These are:

- Predominantly informal and voluntary programs, with the exception of the product stewardship initiatives;
- Reference is usually made to the CCME definition of pollution prevention, although there is substantial variation in the interpretation of that definition;
- Provinces with a small population or industry base do not expect to implement a formal program, since their dealings with industry are very customized and personalized (one-on-one);
- Established and successful provincial initiatives were only accomplished with the appropriate dedication of staff and budget; and
- Where there is a formalized pollution prevention program, there is some type of performance tracking implemented.

Interviews with Alberta Environment staff and discussions during the workshop identified the following issues:

- There are varying degrees of understanding of the concept of pollution prevention, and consensus must still be achieved with respect to the definition of pollution prevention that is to be applied and how it is to be interpreted;
- There are numerous Alberta Environment initiatives currently underway that may be compatible with a formalized pollution prevention program, or could provide a basis upon which a pollution prevention initiative could be constructed;
- It was generally accepted that a clearly identifiable pollution prevention initiative must be established within Alberta Environment to meet the expectations of internal government strategy commitments, keep up with industry leaders, and satisfy national requirements, although there was resistance by some individuals to pursuing a formal pollution prevention program within Alberta Environment;
- Any pollution prevention program that is developed was seen as likely having both voluntary and mandatory components. The voluntary initiatives would provide for flexibility for the participants, while the mandatory component could contribute to the credibility of the initiatives or address poor environmental performers. The initiatives and the balance of voluntary and mandatory were not identified;
- There was general support in attempting to encourage the participation of pro-active and receptive industry groups through industry associations;

- The initial program deliverables were identified as likely consisting of; initial program development proposal (and discussion paper preparation), stakeholder consultations, technical and procedural guide development, development of educational programs (targeted to headquarters, regions, and industry participants), monitoring and reporting requirements (possibly enabling consolidation with other reporting requirements), and staff allotment for the program implementation;
- A comprehensive, rather than substance-specific, approach should be taken;
- Once the program format is proposed, there should be a stakeholder participation component (both within Alberta government agencies that may have overlapping jurisdictions, and with industry and special interest groups) prior to program implementation (this consultation should not, however, unreasonably extend the implementation of the program); and
- Numerous suggested initiatives were tabled that could be further be evaluated as to their feasibility for inclusion in the program, once the initial structure of the pollution prevention program is agreed upon.

RECOMMENDATIONS

Considering the input obtained from Alberta Environment staff, the research information obtained, and the current state of pollution prevention programs nationally and internationally, the following recommendations are made respecting the options available for the development of a formalized pollution prevention program for Alberta (priorities are presented in brackets):

Policy Development:

1. Prepare and distribute internally a policy statement (or equivalent indication of commitment), identifying the goals of an Alberta Environment pollution prevention program and supporting the timely implementation of the program within Alberta Environment (priority – near term);

2. Adopt the definition and interpretation of P2 used by the Ontario Ministry of Environment and Energy. This definition is compatible with both the CCME and Environment Canada definitions, and addresses resource conservation. This definition could also be modified to address the issue of 'environmental disturbance' (priority – near term);

Program Framework Development:

3. Develop program goals and objectives;

4. Prepare a discussion paper for external distribution presenting the rationale for implementing the program and describing the proposed program (priority – near term);
5. Present the discussion paper to Alberta government departments that may be affected by an Alberta Environment P2 Program. (priority – near term);

6. Incorporate comments obtained from the discussion paper presentations into a program proposal, which should be presented to industry and special interest groups (such as CASA) for their input and to solicit some industry associations to participate in informal partnerships (or Memoranda of Understanding, if deemed appropriate) with Alberta Environment (priority – near term);
7. Consider the feasibility of establishing policies respecting: 1) requiring Alberta government suppliers to have pollution prevention plans, and 2) requiring any major recipient of Alberta government funding to have pollution prevention plans. (priority – near term);
8. Develop the necessary technical and procedural guides (likely to be based on the approach taken by Ontario, structured on the EPA process) (priority – near term);
9. Assess the feasibility of pursuing Memoranda of Understanding, or alternative partnerships with industry groups (priority – near term);
10. Assess the feasibility of requiring the development and implementation of pollution prevention plans among the requirements to participate in a "Gold Club" concept that recognizes and rewards select qualified approval holders (and other qualified participants). (priority – near term);
11. Assess the feasibility of utilizing the expertise that the Action on Waste group has in program development and implementation (priority – near term);

Program Implementation:

12. Implement internal awareness training (education) to ensure a common understanding of the adopted concepts of pollution prevention, and the proposed program initiatives (priority – near to midterm);
13. Develop a similar education program for industry and the public to publicize the program and its benefits (priority – midterm);
14. Propose a pollution prevention category to be included in the Emerald Awards (priority – long-term);
15. Modify the Alberta Environment web page to include information on the pollution prevention program (initially respecting the program, and later providing information on initiatives, information sources, contacts, fact sheets and pollution prevention success stories) (priority – midterm);
16. Publicize the successes of the program (priority – mid- and long-term);

Program Monitoring:

17. Develop program performance monitoring criteria (priority – midterm); and
18. Monitor the effectiveness of the program, providing periodic reviews and improvements as needed (priority – long-term).

(Note – near term refers to a one to two year period; midterm refers to a two to three year period; and long-term refers to longer than three years)

The implementation of recommendations adopted by Alberta Environment will ultimately depend on the direction it decides to pursue for a formalized pollution prevention program. Factors such as manpower and budget will influence the overall schedule of activities in the program.

Alberta Environment should review the recommendations and evaluate the feasibility of those selected before a formalized pollution prevention program can be developed. The first essential components to program development are the identification of the program goal, and the establishment of supporting policy to encourage the prerequisite change in waste and pollutant management approach. It is likely that the initial emphasis will be on voluntary initiatives, but other strategies may also be pursued.

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APPENDIX 1

PROVINCIAL QUESTIONNAIRE

Pollution Prevention Interview Information

Discussion with ____________________________(phone number (   )
, of ________________________________:-

1. Definition of Pollution Prevention used:

2. Program Name:

3. Associated Regulation or Guideline/Code:

4. Contact Name and Number:

5. Program Objective:

6. Program Requirements:

7. Elements of the Program: planning, community involvement, information required, reporting

8. Participant's Eligibility Requirements:

9. Voluntary or Mandatory (if so, how implemented):

10. Pilot stage to program:

11. Stakeholder Participation Description:

12. Future Trend:

13. Past Problems:

14. Pitfalls to Avoid:

15. Obstacles to Future P2 Program Development:

16. Additional comments:

APPENDIX 2

ALBERTA ENVIRONMENT STAFF QUESTIONNAIRE

Issues to Discuss During Alberta Environment Interviews:-

No formal program exists at AENV, consequently the need for the current study. We need to establish a baseline of understanding and application of P2 principles and concepts, therefore, please discuss the following items:

1. Background:-
    - Briefly describe your understanding of P2 (what definition of P2 used);
    - How does P2 fit into AENV's current environmental management framework;
    - Where in the environmental management hierarchy do you see P2 starting;
    - What are the key principles of a P2 program (prevention vs. control, voluntary vs. mandatory, total environmental quality management approach, etc)
    - What do you see as the main motivators behind a P2 program for AENV? – for industry?

2. Existing Applications of P2 in AENV Programs:-
    - What policies and guidelines incorporating P2 principles in place
    - What department is responsible (contact name)
        - Voluntary or mandatory (if so, how is it required and enforced)
        - When started
        - Target audience
        - Performance reports/tracking
        - Infrastructure needed to support program
    - Additional information

3. P2 Commitment:-
    - What should the department's responsibility be in a P2 program
    - What should industry's responsibility be in a P2 program
    - What do you see as the components of a P2 program, e.g. substance specific or multimedia targets?
    - Who is responsible for creating any given component of the P2 program
    - What are the reasons for creating the P2 program within AE
    - What are the AENV P2 goals/where stated/set by whom/timing
    - What type of support (e.g. mission statement, funding, staff resources, etc.) is in place, planned to be in place, or needs to be put in place for any P2 program
    - How do the existing/proposed P2 program goals coincide with the overall P2 directives (are all components of the overall directive being met)
    - What is the AE organizational structure for the P2 program and how can it interrelate within AE divisions/branches/regions for support
    - Any potential legislated barriers to implementation of the P2 program

4. P2 Program Logistics:-
    - Accessibility ease and completeness of P2 related information within AE, e.g. hazwaste generation and recycle data, baseline waste data, multimedia facility waste data (air, liquid, solid), SME's, municipalities, non-approval operations, etc.

- AE departments responsible for maintaining this information
- Opportunities/limitations to P2 inherent in existing approval approach
- Program funding availability (present/future)
- Program staffing availability (present/future)
- Expectations for P2 program deliverables (present/future)
- Past stakeholder involvement in P2 initiative development
- Potential for interdepartmental information sharing to support P2 program

5. P2 Program Direction:-
   - Desired P2 Program objective/goals, and structure within AE? –within industry?
   - P2 Program implementation schedule expectations (phasing?)
   - Target audience for P2 Program
   - Voluntary or mandatory (if so, how implemented)
   - Pilot stage to program or direct implementation
   - Type of performance tracking
   - Stakeholder participation format and expectations (public/industry/sp. Interest/SME's/hospitals/municipalities)
   - Incentives
   - Which sectors are best positioned for rapid implementation of a P2 program
   - Additional comments

APPENDIX 3

SUMMARY OF U.S. POLLUTION PREVENTION LEGISLATION AS OF 1992

The following pollution prevention related State legislation was in place as of March, 1992:

- Alaska - Solid and Hazardous Waste Management Act,
- Arizona - Amendments to Arizona Hazardous Waste Management Statutes,
- California - Hazardous Waste Reduction and Management Review Act,
- Connecticut - Environmental Assistance to Business Act,
- Delaware - Waste Minimization/ Pollution Prevention Act,
- Florida - Pollution Prevention Act,
- Georgia - Amendment to Hazardous Waste Management Act,
- Illinois - Toxic Pollution Prevention Act,
- Iowa - Toxics Pollution Prevention Act,
- Kentucky - (no title),
- Louisiana - Waste Reduction Law,
- Maine - Reduction of Toxics Use, Waste and Release Act,
- Massachusetts - Toxic Use Reduction Act,
- Minnesota - Toxic Pollution Prevention Act,
- Mississippi - Comprehensive Multimedia Waste Minimization Act,
- New Jersey - Pollution Prevention Act,
- New York - Hazardous Waste Management Act,
- North Carolina - Hazardous Waste Management Act,
- Oregon - Toxic Use Reduction and Hazardous Waste Reduction Act,
- Rhode Island - Hazardous Waste Facility Planning Act,
- Tennessee - Hazardous Waste Reduction Act,
- Texas - Waste Reduction Policy Act,
- Vermont - Hazardous Waste Management Act,

- Washington - Hazardous Waste and Substances Reduction Act, and
- Wisconsin - Hazardous Substances, Toxic Pollutants, Hazardous Waste Use and Release Reduction.

Colorado, Michigan, Ohio, and South Carolina were expected to enact legislation in 1992.

APPENDIX 4

SAMPLE POLLUTION PREVENTION PROGRAMS

Summary of Example Pollution Prevention Programs Outside Canada

The following summarizes the six different pollution prevention programs from the United States that were reviewed by ICF Kaiser Canada (March 1998) as part of the B.C. Pollution Prevention Pilot Program:

1. **U.S. EPA StarTrack Program, New England, USA**: this program is part of the StarTrack Environmental Leadership Program (closely related to the EPA Project XL program, which is a voluntary and national initiative). To participate, a company must develop and maintain: comprehensive compliance audits, environmental management systems audits (based on ISO 14000), independent third party triennial review of audits to ensure credibility (this component would also include recommendations for pollution prevention), and an environmental performance report. The benefit to the participating company is intended to be more flexibility with respect to certain regulation and permit conditions. The program was in the second year of a pilot program in 1998. Barriers encountered were: EPA organizational culture focussing on regulatory enforcement, and company skepticism toward the costs/benefits of voluntary program participation.

2. **Multi-media Permitting Project, New Jersey, USA**: this initiative arises from the 1991 New Jersey Pollution Prevention Act requiring the establishment of a mandatory pollution prevention regime, and addresses problems arising from fragmented, media-specific approaches to environmental management. Participating companies are required to enter into a Memorandum of Understanding (MOU) outlining their specific terms and conditions. They are also required to develop a Pollution Prevention Plan, and submit annual performance reports (complete Plan revision was required every five years). The project had a deadline for companies to volunteer to participate two years after the pilot project began. Participating companies would roll all their permits into one. The benefit to the company was increased permit flexibility, and simplification of the permit revision process. After five years, the project still remains as a pilot, and may be phased out due to lack of interest from companies and political indecision regarding the operational specifics of the initiative.

3. **Minnesota Environmental Regulatory Innovation Act, Minnesota, USA**: a pilot program was established as a result of the 1996 Minnesota Environmental Regulatory Innovation Act to promote voluntary compliance with environmental requirements through a program of environmental audits that included preparation of a pollution prevention plan and progress report submission. This pilot worked in conjunction with the implementation of the Minnesota XL permits (a part of the national XL program initiated in 1995).

4. **Victoria EPA Accredited License, Victoria, Australia**: to qualify as an accredited licensee, companies must implement: an ISO 14000 based environmental management system, an environmental audit program, and an environmental

improvement plan (incorporating community involvement) Accredited licenses, which consolidate old licenses into a single new license, must be reviewed and updated every five years. The intent of this approach is to avoid the 'command-and-control' approach. It does not replace the existing approval process, but rather provides an alternative to permitting. The advantage to participating companies is that the 'arms-length' approach allows the government to set performance standards and maximum discharge rates, then monitor the results (allowing for more efficient focus of staff attention on the less proactive, more needy industries). It also allows eligible companies to fast-track through the approval process, and to reduce the amount of reporting that is required.

5. **U.S. EPA Project XL and Intel Permit, Arizona, USA**: Project XL is a national pilot program that tests innovative ways of achieving improved environmental protection. The Intel permit represents the Intel Fab 12 facility permit which includes a facility-wide cap on air emissions to replace individual permit limits for different point sources. The XL program is voluntary. Permit flexibility is attained by achieving superior environmental performance at a facility. Results of the Project XL pilot may ultimately be used to modify future environmental requirements. Currently, the pilot program only allows flexibility to individual project participants.

6. **Strategic Environmental Management and the Voluntary Initiative for Pollution Prevention, Pennsylvania, USA:** this voluntary program represents a move from a compliance focussed regulatory approach to a new pollution prevention approach for regulated companies. Participating companies must develop and implement: an environmental management system, pollution prevention plans (with regular performance reports), effective community involvement, and environmental cost accounting. Participating companies then may be eligible for potential regulatory flexibility. The program does not replace current permits and regulatory requirements, but rather promotes methods to avoid the need for compliance with the requirements in the first place.

APPENDIX 5

SUMMARY OF CANADIAN JURISDICTION POLLUTION PREVENTION INTERVIEW DISCUSSIONS

Summaries of the Canadian Jurisdictions' Pollution Prevention Initiatives:-

The summaries of the discussions with the various Canadian jurisdictions' pollution prevention representatives are presented below:

Environment Canada

Contact-John DeGonzague (819)953-7970

The federal pollution prevention initiatives undertaken by Environment Canada are summarized annually in the document entitled 'Progress in Pollution Prevention'. The information for the most recent document (1997-1998 Annual Report) is summarized below. Environment Canada's initiatives include proactive participation with other government and industry groups and are driven by the goals of the federal Pollution Prevention Strategy, which address:

- institutionalization of pollution prevention within the Federal Government;
- fostering a national pollution prevention effort with other governments;
- achieving a climate in which pollution prevention becomes a major consideration in industrial activities in the private sector;
- providing access to the information and tools necessary to implement pollution prevention practices for all Canadians; and
- participating in international pollution prevention initiatives.

During the 1997-1998 reporting year, Environment Canada has undertaken the following initiatives:

Federal Government Initiatives:- the Canadian Environmental Protection Act (CEPA) has had amendments developed (and now adopted) which have pollution prevention as its guiding principle, including provisions for pollution prevention planning for toxic substances and within federal operations. Also, regulations emphasizing pollution prevention were introduced for diesel fuel, benzene in gasoline, and the registration of tanks for petroleum products on federal lands. Effective for the 1997 reporting year, the National Pollutant Release Inventory (NPRI) required facilities to provide qualitative information on their pollution prevention activities for NPRI-listed substances. Sustainable development strategies by federal departments and agencies have also been tabled with the House of Commons. Transport Canada, Natural Resources Canada and Environment Canada announced Phase 2 of the Federal Smog Management Plan. Environment Canada purchased 'green power' for federal facilities in Alberta through the Federal Buildings Initiative.

Other Governments Initiatives:- partnerships between the federal government and other orders of government continued. During the first 10 years, successes of the St. Lawrence Action Plan (a multijurisdictional project focussing on reducing industry impact on the St. Lawrence River) included a 96% reduction in toxic effluent releases from 50 industrial facilities, the protection of 12,000 hectares of wildlife habitat, and an increase in the beluga whale population.

Harmonized approaches with other government groups, such as the Canadian Council of Ministers of the Environment (CCME), included the revised and expanded National Action Plan for Environmental Control of Ozone-Depleting Substances and their Halocarbon Alternatives, and the continuing Canada-wide Accord on Environmental Harmonization. The CCME also continued to recognize leaders in pollution prevention through its Pollution Prevention Awards Program.

Private Sector Initiatives:- partnerships between the federal government, provincial/territorial governments and the private sector continued. Ontario and Environment Canada have various ongoing pollution prevention memoranda of understanding with private sector groups. The Accelerated Reduction/Elimination of Toxics (ARET) program had a 61% (21,499 tonne) reduction in annual emissions from the base year reported levels of participating industries. In Atlantic Canada, the Offshore Petroleum Boards required project to incorporate pollution prevention into their offshore development plans. The Fraser River Action Plan had Fraser River businesses implement best management practices and prevention plans. Initiatives targeting small and medium-sized enterprises (SME's) resulted in pollution prevention pilot project implementation in Manitoba, and a funding program for new prevention technologies in Quebec. Industry Canada and Environment Canada launched the Canadian Business Environmental Performance Office (BEPO), an environmental management information Internet tool directed at SME's. Additional memoranda of understanding exist with the following industry groups: Canadian Motor Vehicle Manufacturers' Association, Automotive Parts Manufacturers' Association, Hamilton District Autobody Repair Association, British Columbia Fabricare Association, Ontario Dental Association, Manitoba Heavy Construction Association, Ontario Metal Finishing Industry Associations, Ontario Printing Industry, the Manitoba Division of the Alliance of Manufacturers and Exporters in Canada, and the Hamilton International Airport. Environment Canada also supports various Research and Development initiatives targeting clean process technologies, as well as numerous other training and education initiatives.

Canadian Public Initiatives:- the Canadian Pollution Prevention Information Clearinghouse was launched and provides an Internet tool for the public. The Canadian Institute for Environmental Law and Policy published 'A Citizen's Guide to Pollution Prevention'. The Canadian Labour Congress issued 'A Workers' Manual on Pollution Prevention'. These initiatives illustrate some of the many non-governmental programs underway.

International Community Initiatives:- pollution prevention workshops, seminars and projects were carried out with foreign governments and industry sectors by the Canadian International Development Agency, Environment Canada, Industry Canada and others. Targeted countries included Brazil, Costa Rica, Morocco, Thailand, and China. Continued projects under the Multilateral Fund of the Montreal Protocol provided innovative international cooperation on technologies and pollution prevention.

The next annual report is expected to be published within the next month.

Environment Canada has recently (December 1999) circulated a proposal for the implementation of the pollution prevention planning provisions established by the new (1999) Canadian Environmental Protection Act (CEPA). The proposal recommends that it would require any person/organization with any CEPA- toxic substance (substances that have been added to Schedule 1 of CEPA, or where gaps appear to exist for the 1988 Schedule 1 substances), or sources of international air or water pollution be required to prepare and implement a pollution prevention plan. The entire plans would not be required for submission, but two declarations would need to be completed (one to indicate that the plan is being prepared and will be implemented, and another to subsequently indicate that it has been implemented). Virtual elimination plans (similar to pollution prevention plans but with the goal of elimination rather than reduction) would also be required under Part 5 of the new CEPA for all substances on the Virtual Elimination List.

It should also be noted that in personal discussions (February 1, 2000) with Mr. James Riordan, Director of the National Office of Pollution Prevention, Environment Canada, he indicated that the interpretation of the Environment Canada definition of pollution prevention is to include only those activities identified in the Environment Canada definition statement. It is also only the on-site activities that are considered to be applicable.

Newfoundland

Contact-Derrick Maddocks (709)729-5782

The Department of Environment and Labor has a ‘Green Committee’ which develops policies for internal use focussing on recycling. Through a number of departmental reorganizations, a Pollution Prevention Division has been formed through which pollution prevention policies and activities will be developed. The mandate of this group of approximately 20 staff addresses the following areas: industrial compliance, waste management, pesticides, and science and monitoring. There is no specific program or position with respect to ‘pollution prevention’. There is no specific regulation addressing hazardous waste management (there is a draft Used Oil Regulation, but no associated programs). If pollution prevention were to be defined it would likely apply to anything that would stop pollution, which could include any of the waste management hierarchy activities. Due to the small population and industry base (one refinery, one cement plant, and three mines), issues are dealt with on a site specific basis and a one-on-one personal level.

There has been no progress on dealing with the SME's – all wastes still go to the landfill. Legislation changes must occur for advances to be made in these areas. There is a Multimaterial Stewardship Board that governs a beverage container recycling program, and a household hazardous waste program. It is currently looking at a cardboard recycling initiative.

If there were a formalized pollution prevention program in place, it would be expected to be voluntary (although it would be preferred to be mandatory). There would likely be a phased approach to implementation, and stakeholder participation would be expected from business rather than the public. It is expected that there will ultimately be a formalized pollution prevention program in place in Newfoundland. With many of the local industries also existing elsewhere in Canada or the U.S., it is likely that the industries may initiate many of the pollution prevention initiatives.

Nova Scotia

Contact-Brent Baxter (902)424-2534

Following the Department's May 1997 document 'Pollution Prevention Discussion Paper' and information from stakeholder participation programs, the province developed its 'Pollution Prevention Implementation Plan'. The plan addressed the following issues:

- Confirmation of the adoption of the CCME definition of pollution prevention,
- A continued commitment to a cooperative approach involving the private, public and community sectors,
- A promise to evaluate the effectiveness of the voluntary approach to determine whether mandatory requirements should be introduced,
- A specified number of pollution prevention partnerships with private businesses and the public sector partners, and a target schedule,
- A commitment to develop product stewardship initiatives that may be pollution prevention based,
- To develop a working pollution prevention partnership with Environment Canada,
- An incentive package that will include pollution prevention awards, relief from the regulated approval process, and an assessment of economic instruments that could potentially enhance the pollution prevention effort,
- Development of a protocol to measure program success, and
- A commitment to an annual review of the Plan and a promise to report on program progress in future State of the Environment reports.

The formalized pollution prevention program has essentially been implemented since mid-1998 (without a pilot program phase), and was supported by interest from both industry and the government. The definition guiding the program is the CCME definition. There is a pollution prevention section within the Environment Department, with three full-time staff and a dedicated budget. Implementation of the pollution prevention program would have been impossible if it had not been for the support received in both staff and budget. The legislation backing the program are the Activities Designation and the Environmental Assessment Regulations under the Nova Scotia Environment Act. Revisions to the regulations are expected within a year, enabling a requirement for pollution prevention plans, and possibly providing for selected industry (such as the SME's) approval exemptions if an approved Pollution Prevention Plan is in place.

The current program focus is on source recycling (on-site, not off-site), although some industries are trying to broaden the activities considered as pollution prevention. The program is voluntary at present. There are several MOU's in place at present: the Dental Association, Nova Scotia Power, two hospitals, two pulp and paper companies, and sectoral MOU's with printing and graphics, drycleaning, and body shop industry groups. There is also development underway for a Halifax Pollution Prevention Plan. The province has also recently signed the United Nations Declaration on Cleaner Production, thereby renewing and expanding the government's commitment to pollution prevention.

Obstacles experienced during program development were primarily related to government funding, since voluntary programs are usually the first to get reduced. Future modifications to the program may include an eventual baseline establishment, and an associated reduction goal and target date. There has been consideration to using manifest information toward this end. The manifests are, however, separated geographically within Nova Scotia resulting in a fragmentation of the information and creating difficulty in information transfer. Alternatively, there is the toxic control approach addressing specific substances, similar to the approach in CEPA. These will be issues to resolve in the next few years.

New Brunswick

Contact-Mark Glynn (506)457-4848

The New Brunswick Department of the Environment has a history of incorporating the concepts of pollution prevention in its environmental activities. This practice has developed from the nature of the certificates of approval which are developed for industries with the potential to emit environmental contaminants. While establishing maximum emission standards, the Department also works with the industry (and other stakeholders) to develop plans in a manner which encourages adoption of pollution prevention techniques. These techniques included process changes that eliminate the need for 'end-of-the-pipe' control, as well as the substitution of certain raw materials so as to minimize environmental risks. This approach has also provided the means for verifying actual reductions in pollution on a company specific basis.

These efforts generally result in the reduction of potential environmental impacts, as well as long term cost savings to the industry. The more recent initiatives, such as ISO 14000, as well as international marketing requirements for certification in certain sectors of the economy, contribute to the overall direction of this strategy.

Prince Edward Island

Contact-Tom Fraser (902)368-5037

Most of the progress that has been made regarding pollution prevention has been in the area of solid waste management. Phase I of an island-wide pilot project in solid waste reduction has bee ongoing in the East Prince County region of Prince Edward Island for approximately five years. It has resulted in a more than 65% diversion from landfill.

There is no specific legislation or policy that addresses pollution prevention. There is no specific definition for pollution prevention, but it is seen to be the elimination of the release of contaminants into the environment, and as such could include all of the waste management hierarchy. Some existing regulations (Used Oil Handling Regulations, Lead Acid Battery Regulations, and the Ozone Depleting Substances and Replacement Regulations), as well as the draft Solid Waste Resources Management Regulations, have components in them that address the reduction of contaminant release into the environment, and all have a recycle aspect to them as well.

There is a small population base to Prince Edward Island (136,000 people), and limited heavy industry. There are seven facilities that burn Bunker C and one that burns Bunker A. Each requires a permit. Most issues are dealt with on a case-by-case basis by the Department of Technology and Environment, with a focus to applying reasonable best practices.

The Department was, until recently, the owner and manager of the island's landfill sites, but this responsibility was recently transferred to the Island Waste Management Corporation which was formed in the summer of 1999. As such, it is expected that pollution prevention will become a new action item, to be pursued by existing staff, with tasks replacing the previous landfill duties. It is expected that any pollution prevention program to be developed would likely be voluntary and would have a 'personalized' approach, due to the small industry base on the island.

Quebec

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Initiatives in Quebec are voluntary, with a focus toward application of best available technologies. Numerous information documents have been issued since 1989 addressing optimum operating practices in many different industry sectors (only one document received was available in English and this addressed the agricultural sector). A recent project, the Enviro-Club, has been well received by industry. This initiative is a jointly funded Environment Canada and industry initiative where industry groups hire a consultant to provide industry-specific pollution prevention reviews. These services are funded by industry participants paying a club membership fee, which is matched by government funds.

Ontario

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Ontario's approach to environmental protection is based on a system of general legislation, specific regulation, and approval instruments in combination with various programs and tools which provide technical guidance, environmental standards and public information. Encouraging behavior change or promoting voluntary action is a very important complement to regulatory intervention. With this approach, the government attempts to achieve its environmental policy objectives by educating the appropriate players to modify their behavior voluntarily. The current program is implemented by the Partnerships Branch, which addresses non-regulated programs. Due to the maturity of the existing program in Ontario, the Branch is studying how to make pollution prevention a stronger component of the Certificates of Approval.

In April 1992, Ontario established an organizational unit (the Pollution Prevention Office) to focus its pollution prevention efforts. Pollution prevention is defined in a manner similar to the CCME definition. Pollution prevention includes practices, bounded within the facility, that eliminate or reduce the use of hazardous and non-hazardous materials, energy, water, or other resources, as well as those that protect natural resources through conservation or more efficient use.

Ontario encourages the adoption of pollution prevention by: incorporating it into existing and new government programs and policies, by establishing voluntary pollution prevention partnerships, through a public recognition program (Pollution Prevention Pledge Program – 'P4') that honors significant pollution prevention achievements, and through the creation of special training materials and the sponsorship of seminars and educational programs.

Through voluntary pollution prevention partnerships with industrial, commercial, community and government sectors, Ontario promotes the implementation of environmental management systems and the incorporation of pollution prevention into corporations' business plans, which hopefully result in reductions in the toxic substances and wastes used, generated and released. Currently Ontario has MOU's with five industrial sectors (auto parts manufacturing, chemical producers, metal finishers, motor vehicle manufacturers, and the printing and graphics sector), the Ministry of Environment, and Environment Canada, as well as with the Regional Municipality of Hamilton-Wentworth. There were 163 facilities participating in the P4 Program as of April 1999. Other active pollution prevention partnerships with community, commercial and institutional groups include: the Emery Creek Environmental Association, the health care sector, autobody refinishers, and universities. Previous partners include the photo processing mini-labs, industrial laundries, food processing sector, and restaurants. Reductions of 167,000 tonnes per year of toxic substances and hazardous wastes beyond compliance have been publicly reported at 74 facilities through case studies in pollution prevention MOU's since 1992.

The Pollution Prevention Pledge Program (P4) acknowledges the environmental achievements of industrial, commercial, institutional, community and government organizations. Achievements include reducing or planning reductions in releases of chemicals to the environment, lowering the use of toxic chemicals, and in diminishing the generation or disposal of hazardous or liquid industrial wastes. The Program encourages adoption of pollution prevention and pollution prevention planning. Total reductions of toxic substances and hazardous wastes publicly reported by participating facilities through P4 since 1993 are 34,000 tonnes per year beyond compliance. An additional 40,000 tonnes per year reductions of climate change gases have been reported.

As of March 24, 1998, net total reductions of toxic substances and wastes reported through the voluntary pollution prevention partnerships and the P4 Program are 191,000 tonnes per year. (the Ontario Ministry of Environment's Business Plan has an overall pollution prevention goal to reduce 200,000 additional tonnes of toxic substances and wastes through voluntary pollution prevention partnerships and the P4 Program by the year 2010, based on a 1996 baseline quantity of 186,000).

Ontario is working within the government to promote the application of pollution prevention and environmental management systems principles in on-going and new programs and policies. An example of a program area in which the pollution prevention partnerships are playing an active role is the Ontario Smog Plan. As well, Ontario aims to develop alternative policy tools to improve environmental performance of participating industries such as sector self-management and performance agreements.

Initially, the program focused on a company by company approach, but the trend now is toward a sector approach, and to give pollution prevention a higher profile and broader approaches. Companies have appreciated the fact that the Ministry of Environment would specify requirements as well as harmonize with federal programs, especially with respect to reporting requirements. Another factor that may influence the future of any pollution prevention initiatives is the fact that Ontario is in the process of implementing a hazardous waste fee program (program coordinator is Frank Coshchi (416)314-4191).

Pitfalls associated with the past program centered on the isolation of pollution prevention from other environmental issues. The pollution prevention principles did not get embedded into the Ministry's approach, rather the focus initially was external. It is important to have the approach supported and applied within the regulatory department, as well as by the companies. In the past, pollution prevention had also been dealt with as an issue separate from the hazardous waste and toxics Branch: it is now seen that the pollution prevention and the hazardous waste groups should work together.

The next few years of the pollution prevention program are expected to see pollution prevention approach become incorporated in more of the Ministry's programs and become an operating principle for environmental management. The Ministry is not trying to provide a 'level playing field' for businesses as much as trying to 'tilt the playing field' in favor of the environmentally proactive companies.

Manitoba

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Manitoba established a Pollution Prevention Branch in 1993, coinciding with the adoption of the National Commitment to Pollution Prevention by the CCME. It adopts the CCME pollution prevention definition (recycling on and off site are considered, and it is likely that the Department would include the rest of the waste management hierarchy as well). Pollution prevention is not specifically addressed in any associated regulations or codes. There has, however, been a recent license that specified that management of process waste refer to a pollution prevention MOU (to be established). The Branch (between eight and ten staff) deals with planning, waste reduction activities and pollution prevention through partnerships, product stewardship and waste reduction programs. While progress had been achieved in the diversion of waste to more acceptable options such as recycling and energy recovery, it was felt that a more concerted effort was required to reduce waste and pollutants at the source.

In 1996 a MOU was signed with the Alliance of Manufacturers and Exporters Canada-Manitoba Division, to promote awareness of the benefits of applying pollution prevention, and identify the elements of a model pollution prevention program for Manitoba. This constitutes the formalized pollution prevention program within the province, and targets the SME's. There has not been any stakeholder participation in this program, and there was a small pilot consisting of one company for one year, and that progressed into the full current program. Through this initiative, draft information materials were prepared, a procedure for providing technical guidance was developed, success stories documented, and several Manitoba businesses received assistance towards introducing new pollution prevention techniques. The program was initially of one year duration, subsequently extended for two more years, and it could again be extended if the program performance is good. There have not been too many industries volunteering to participate in the project to date. It is expected that the Alliance is to be increase in scope, with a larger MOU to include more associations. A number of other voluntary partnerships also exist: golf courses, heavy construction, the Chamber of Commerce, the Prairie Grain Elevator Association. Past problems included: skepticism of industry to have regulators leading the program (expected to cost more), and senior management resistance (industry doesn't take it seriously). It also became evident that it was important to have the practical expertise available to implement the program, i.e. having the awareness of the pollution prevention opportunity assessment process, pollution prevention alternatives, alternative evaluation and implementation. This is important for ensuring the credibility of the program.

Other related pollution prevention activities include: promotion of pollution prevention by Manitoba government departments as part of the Sustainable Development Act implementation process, on-site consultations in the pre-licensing phase of developments, and partnerships with other organizations such as the Manitoba Heavy Construction Association.

Saskatchewan

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Saskatchewan Environment and Resource Management has adopted pollution prevention as a guiding principle, but there is no formalized program in place. The Environment Canada definition is generally used to define pollution prevention activities. There is no dedicated office, department or division for pollution prevention program implementation, nor is there any regulation specifically addressing pollution prevention (a comprehensive environmental regulation review is commencing).

The pollution prevention concept is incorporated into policy development. Focus has been placed on formal and informal partnerships to implement pollution prevention initiatives. Waste minimization has been achieved internally through green initiatives (such as the zero building waste paper program) and externally through partnerships with industry. Demonstration projects, all voluntary, have been encouraged and recycling programs have been developed through cooperation and partnership with industry organizations. Specifically, there have been a couple of programs that have been pursued with Environment Canada: a home builder's project focussing on recycling and efficient use of building materials, and a pollution prevention guide for the printing industry.

Past hurdles have been related to education of the public and industry, with it being difficult to isolate pollution prevention initiatives from other environmental programs. There are plans to develop more pollution prevention activities, but they will likely remain voluntary and focus on education and MOU's.

Alberta

Contact-George Murphy (780)427-8472

The pollution prevention principle has been applied through the environmental management framework within Alberta Environment as opportunities presented themselves (primarily through approvals, waste minimization and management, and other programs). Alberta Environment established a pollution prevention team in 1998, whose goal is to combine current pollution prevention activities with new pollution prevention initiatives to create a formal pollution prevention program for the Department. The Alberta Environmental Protection and Enhancement Act (EPEA) established the implementation of waste minimization plans as an integral component of Environmental Impact Assessments and applications for Approvals. The implementation of pollution prevention opportunities is encouraged through the approval renewal process to achieve continuous reductions in releases to the environment. By-product synergy is also encouraged. Guidelines for the preparation of waste minimization plans have been prepared. Part 9 (Waste Minimization, Recycling and Waste Management) of EPEA also enables the establishment of province-wide recycling programs for designated materials and mandates the use of surcharges, and the establishment and management of recycling funds (currently applied to beverage containers, tires, and used oil).

Alberta Environment is also a participant on the Clean Air Strategic Alliance (CASA), which currently is addressing pollution prevention/continuous improvement initiatives. This forum also provides a multistakeholder forum for the consultation process. The Northern River Basins Study has also recently indicated that pollution prevention is the preferred approach to implementing the study's recommendations.

Eleven detailed waste minimization guides and 25 fact sheets have been published for priority industry sectors in Alberta. To date, initiatives have primarily addressed non-hazardous wastes, with a focus on recycling.

British Columbia

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Pollution prevention is seen as an overall philosophy within the Pollution Prevention and Remediation Branch of the B.C. Ministry of Environment, Lands and Parks (MELP). The Branch's scope includes contaminated sites, stewardship programs and the pesticide program, in addition to the pollution prevention program. There is a dedicated budget for the Branch and a staff of 45 in total.

There is no specific legislation addressing pollution prevention. The interpretation of a pollution prevention initiative covers the full waste management hierarchy, from source reduction through to site remediation.

Pollution prevention initiatives have focussed on large industrial sites, small and medium sized enterprises (SME's), and municipal solid waste. In 1995, BC signed a MOU with six companies and the Canadian Chemical Producers Association to participate in a voluntary pilot project to demonstrate the feasibility of exploring pollution prevention planning as an alternative to, or adjunct to, the existing waste management permit system. These six companies, plus a seventh company that did not sign the MOU, initiated pilot projects at their facilities to help test pollution prevention models, and to gain the benefits of the process. Key concepts are pollution prevention, the use of public advisory committees (PAC's), and the commitment to continual improvement.

The BC pollution prevention planning process consists of five steps: initiation, environmental review, the pollution prevention plan, implementation, and monitoring and evaluation. The pilot program has resulted in improved working relationships between facilities and the regulators. All companies report enhanced relations with their respective communities and some have reported substantial cost savings. No performance reports were required of the companies for submission to MELP.

An implementation advisory committee has been created to review the recommendations resulting from the pilot program and suggest how the program is to be implemented. Challenges encountered to date are: resources (manpower and finances), education and training (need experts to guide process), changes in the economy, and competing government priorities (program needs the continued support from the government).

The results of the initial demonstration project are summarized in the April 1999 publication entitled 'British Columbia Pollution Prevention Demonstration Project – Final Report, Steering Committee'. In this report, it was recommended that the existing system of permitting and/or regulations should be retained in some situations, and that there are also situations where the permit could eventually be replaced by a combination of regulations and pollution prevention planning authorizations. It was also felt that the program should be voluntary, but that mandatory components separate from the pollution prevention plan should also exist for facility discharges.

Yukon

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There is no formal pollution prevention program in place and there is no reference to pollution prevention in any of it's legislation (the Yukon Special Waste Regulations do not indicate any preferred methods for waste management, such as source reduction). There has been no direction toward any pollution prevention programs or legislation to date. This is largely due to the limited industrial need and the fact that there are no manufacturing industries present. The definition that would be used is the CCME definition for pollution prevention.

Pollution prevention activities have focused on management of solid and hazardous wastes, pesticides and ozone depleting substances. There are stewardship programs in place for beverage container recycling, there is a semi-annual special waste collection program for industries and periodic household hazardous waste roundups. Solid waste recycling programs for households and businesses, along with the development of an environmental auditing program for businesses, have raised awareness and increased waste diversion from landfills. The Recycling Club, a program targeting children, has greatly increased household participation in recycling programs.

Northwest Territories

Contact-Ken Hall (867)873-7654

In 1995, the Environmental Protection Service began to advance the concept of pollution prevention as an environmental protection strategy. There is, however, no formalized program within the Service, and there are no specific regulations or guidelines addressing pollution prevention. Implementation has been through a number of smaller voluntary programs, most of which are not actively pursued at present due to budget cuts and manpower losses. There is also a strong federal presence and there are approximately six different agencies involved with various components of environmental management.

One of the key initiatives was to form a partnership with the NWT Chamber of Commerce and Environment Canada – Prairie and Northern Region. The partnership has helped the government agencies reach their target audience, and has assisted the business community access the expertise, education and funding to enable them to attain reduced environmental liabilities, economic savings and positive publicity. There is a Northern Pollution Prevention Award program, whose performance is to be reviewed to evaluate if it is to continue, as it requires significant effort. There has also been a Construction Demolition Training Program (focussing on material reuse), some in-house pollution prevention poster guides for various industry sectors, an Energy Efficiency Program (grants to non-profit organizations for building upgrades), and an on-going Arctic Energy Alliance (focussing on energy audits and training). Program emphasis has been toward recycle/reuse/recovery, public health, and internal government training toward affirmative procurement.

Additionally, there are some private pollution prevention initiatives, such as PetroCanada receiving used oil and shipping it south for re-refining, and the City of Yellowknife having paint swap areas, wood recovery, and car battery drop-off locations.

There is increasing public pressure to provide more services. There is currently no beverage container recycling program (all goes to landfill). The businesses are generally receptive to new initiatives, if they can see the benefits to be derived from them.

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